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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/800,132

03/06/2001

Radhakrishna Pillai Raghavan Pillai

KRDL 4900

3821

321

7590

10/05/2004

SENNIGER POWERS LEAVITT AND ROEDEL
ONE METROPOLITAN SQUARE
16TH FLOOR
ST LOUIS, MO 63102

EXAMINER

ALEXANDER, JESSE NELSON

ART UNIT

PAPER NUMBER

2666

DATE MAILED: 10/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/800,132

Applicant(s)

PILLAI ET AL.

Examiner

Jesse N. Alexander

Art Unit

2666

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 3/6/01 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5-9</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Singapore on 3/9/2000. It is noted, however, that applicant has not filed a certified copy of the application as required by 35 U.S.C. 119(b).

Drawings

2. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because they are hand drawn. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Examiner suggests "**Wireless ATM Handoff process**" as the title.

4. The abstract of the disclosure is objected to because the title of the application appears on the same page and the abstract language should not include legal phraseology or claim language. Correction is required. See MPEP § 608.01(b). Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

5. The disclosure is objected to because of the following informalities: "References", Section 5 (spanning pages 15- 17) should be removed. The attempt to incorporate subject matter into this application by reference is improper because the section consists of mere references to other applications, patents, and/or publications; and are not incorporation of material for the purpose of disclosure required by 35 U.S.C. 112, first paragraph.

Appropriate correction is required.

Claim Objections

6. Claims 1, 4, 9 and 10 are objected to because of the following informalities:

- Claim 1, line 1: the word "**networks**" should not be plural.
- Claim 4, line 1: the word "the" is missing between the words "schedule" and "make".
- Claim 9:
 - in steps (k) and (o), the word "message" is missing before the word "with".

- In step (m), the word "user" should be removed
- Claim 10 is objected to because of the following informalities: The word "wherein" is missing from line 1. Claim is not in sentence form, the period is missing from the last line.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1 through 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- Claims 1, 3, and 4, recite the limitation "the virtual connection" in lines 7, 3, and 3, respectively.
- Claim 8 recites the limitation "the estimate of the time taken" in the first line.
- Regarding claim 9:
 - The claim recites in step (a), line 3, and again in line 4 the limitation "the connections".
 - The claim in step (a), line 3 recites the limitation "the list of access points"
 - The claim in step (e), line 1 recites the limitation "the backward handoff"
 - The claim in steps (h, i and j), line 1 recites the limitation "the switching nodes"

- The claim in step (n), line 1 recites the limitation "the buffered data"
- Claim 11 recites the limitation "the application" in line 3
- Claim 12 recites the limitation "the switching nodes" in line 2
- Claim 13 recites the limitation "the crossover switch" in line 3

There are insufficient antecedent bases for these limitations in the claims.

Claim Rejections - 35 USC § 103

9. Claims 1, 2, 3, 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freeburg et al. (US 5,940,381 A) in view of Bertacchi (US 5,903,840).

Regarding claim 1, Freeburg et al. discloses a method of handoff of a virtual channel or path connection of a mobile terminal in a wireless ATM network under the control of a connection manager (**CM functions reside in Base Station Controllers and Base Stations, see fig. 6, element 11 and fig. 7, element BSC**) comprising the steps of:

transmitting a sequence of handoff messages (**see ladder diagram, fig. 7, particularly element 70**) between the mobile terminal (**or mobile station**) and the connection manager (**or BSC**), executing a sequence of operations by the connection manager for re-routing the virtual connection (**in col. 7, line 4-12, the BSC re-routes traffic by sending ATM signaling messages**);

Freeburg et al. fails to explicitly teach a method wherein the re-routing of a downstream connection is scheduled using a timer.

However, Bertacchi teaches the concept of a handoff queuing timer (**fig. 4, element 46**) that queues or schedules handoffs (i.e. re-routing of downstream and/or upstream connections) when there are no currently available voice channels in the target cell site (**col. 10, lines 37-43**) and (**col. 10, lines 44-48**).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the Freeburg et al. handoff method with the Bertacchi queuing timer such that downstream (and upstream) connections are scheduled or queued using said timer.

The motivation for said modification would have been to allow the system time to complete all of the required routing messaging and function so that handoffs are deterministic and reliable as described in the related art section of Bertacchi at **col. 1, lines 59-61**.

Regarding claims 2 and 3, Freeburg et al. teaches a method wherein the re-routing comprises the steps of establishing a make segment (**the downstream make segment is created by bifurcation of the ATM stream col. 6, lines 5-13 and fig 3**) and deleting a break segment (**release of the old upstream connection in fig. 4 and as described in col. 6, lines 21-25**)

Freeburg et al. teaches further a method wherein the make segment to be established before the break segment is deleted if an application using the virtual connection can tolerate data duplication (**in the mobile station and BSC are capable to discard duplicate data cells arriving from the new BS see col. 6, lines 13-16**).

Freeburg et al. fails to explicitly teach that the timer schedules the make segment to be established before, after or at the same time as the break segment is deleted.

However, Bertacchi teaches the concept of a handoff queuing timer (**fig. 4, element 46**) that queues or schedules handoffs (i.e. re-routing of downstream and/or upstream connections) in **col. 10, lines 37-43** and **col. 10, lines 44-48**.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the Freeburg et al. handoff method with the Bertacchi queuing timer such that "make before break" handoff downstream (and upstream) connections are scheduled or queued using said timer.

The motivation for said modification would have been to meet Freeburg et al. objectives of a CDMA soft handoff or make-before-break system, as described in **col. 2, lines 59-61**.

Regarding claim 5, Freeburg et al. teaches a method as (in **figures 2-6, element 21 an ATM network switching node**) wherein the re-routing occurs from the point at which the make and break segments meet.

Freeburg et al. fails to explicitly teach a method wherein the timer based re-routing occurs from the point at which the make and break segments meet.

However, Bertacchi teaches the concept of a handoff queuing timer located at the mobile switching center in **fig. 4, element 46**. **It was well known in the art at the time of the invention that MSC contain switching nodes.**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the Freeburg et al. ATM network switching node with the

timer of Bertacchi such that the Bertacchi MSC contains at least one ATM switching node with timer at the point at which the make and break segments meet.

The motivation for said modification would have been to support handoffs between base stations within a group of base stations supported by a base station controller (e.g. BS-to-BS or sector-to-sector handoff within the same cell site) as well as between base stations (MSC-to-MSC) at group boundaries managed by MSCs.

Regarding claim 6, Freeburg et al. teaches a method wherein the MS reports quality signal strength and bit error rate measurement to the BSC indicated a need for the hand off in **col 5. lines 60-64**. These measures are related to the quality of service of the connection.

Freeburg et al. fails to teach the timer schedules the re-routing in dependence upon application requirements and quality of service of the connection.

Bertacchi teaches a queue timer for scheduling hand-off re-routing (**fig. 4, element 46**) and a timer for measuring the signal strength and other parameters **col. 8, lines 29-35**.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the Freeburg et al. soft handoff method with the timer of Bertacchi such that the timer schedules the re-routing in dependence upon application requirements and quality of service of the connection.

10. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Freeburg et al. (US 5,940,381 A) in view of Bertacchi (US 5,903,840), in further view of Huang et al. (US 6,590,879 B1)

Regarding claim 4, Freeburg et al. fails to teach a method wherein the timer schedules make segment to be established after the break segment is deleted if an application using the virtual connection can tolerate data loss.

Bertacchi teaches a queue timer for scheduling hand-off re-routing but fails to expressly teach scheduling a "break-after-make" segment or hard-handoff method.

Huang et al. teaches a hard-handoff (or break-after-make) timer concept in **col. 10, lines 6-9** that delays subsequent requests for handoff while an active handoff is in progress.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the Freeburg et al. Wireless ATM system with the Bertacchi and Huang et al. timers such that the modified timer schedules make segment to be established after the break segment is deleted.

The motivation for said modification would have been to provide the hard handoff capability for idle mobiles not handling interrupt sensitive traffic as taught by Hwang et al. (US 6,671,265 B1) in the abstract.

11. Claim 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freeburg et al. (US 5,940,381 A) in view of Bertacchi (US 5,903,840), in further view of Kuehnel et al. (US 5,907,542 A).

Regarding claims 7 and 8, Freeburg et al. fails to teach a method wherein the timer schedule for re-routing is estimated based on the time taken for switching of the route,

and a method wherein the estimate of time taken includes the time taken for the mobile terminal to switch an RF carrier following re-routing.

Bertacchi teaches a timer capable to schedule handoffs (**fig. 4, element 46**), but fails to explicitly teach a method wherein the timer schedule for re-routing is estimated based on the time taken for switching of the route.

Kuehnel et al. teaches timer capable to monitor internal functions (including intervals between messages and states) of mobile nodes (**col. 5, lines 34-36**) and control (connection manager) functions (**col. 6, lines 33-38**).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Freeburg et al. invention and Bertacchi's timer with the Kuehnel et al. teaching such that the timers would have been adapted to measure both time taken for the time taken for switching of the route and for the mobile terminal to switch an RF carrier following re-routing.

The motivation for said modification would have been to monitor the timing of these re-routing functions to insure that handovers are completed in a timely fashion without run-away processes.

Allowable Subject Matter

12. Claims 9 through 13 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents are cited to show the state of the art with respect to wireless ATM handoff methods:

US 6,570,856 B1 Freeburg et al.

US 5,907,542 A Kuehnel et al.

The following patents are cited to show the state of the art with respect to hard handovers or handoffs using timers:

US 6,671,265 B1 Hwang et al.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jesse N. Alexander whose telephone number is (571)272-3167. The examiner can normally be reached on 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571)272-3139. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2666

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jna3

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10/10/04
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